

AMENDMENTS TO THE CLAIMS

The following is a complete listing of all of the claims in the subject patent application with the status of each claim being indicated in a parenthetical expression. Claims 1, 4, 5, 14 and 16 being currently amended are presented with markings showing the changes made relative to the immediate prior version. Claims 2, 3, 6-13, 15, 17 and 18 not being amended herewith are presented in clean version. Claims 19-31 were previously canceled.

1. (Currently Amended) A clamp for installation on a feedwater sparger end bracket assembly having an attachment plate connected to an end plate of a feedwater sparger within a boiling water reactor vessel, said clamp comprising

a first clamp member including a first internal compartment and a first opening communicating with said first internal compartment, said first internal compartment being defined between a pair of first internal walls of said first clamp member, said first internal walls being spaced from one another by a distance to receive a first portion of the attachment plate and a first portion of the end plate together between said first internal walls with a close enough fit for the attachment plate and the end plate to be constrained against disconnecting from each other;

a second clamp member including a second internal compartment and a second opening communicating with said second internal compartment, said second internal compartment being defined between a pair of second internal walls of said second clamp member, said second internal walls being spaced from one another by a distance to receive a second portion of the attachment plate, opposite the first portion of the attachment plate, and a second portion of the end plate, opposite the first portion

of the end plate, together between said second internal walls with a close enough fit for the attachment plate and the end plate to be ~~entrained~~ constrained against disconnecting from each other, said second opening being spaced from and in alignment with said first opening in facing relation therewith, said first and second clamp members being movable away from one another to increase the space between said first and second openings in an open position for said clamp to allow the feedwater sparger end bracket assembly to be positioned between said first and second clamp members with the first portion of the attachment plate and the first portion of the end plate aligned with said first opening and with the second portion of the attachment plate and the second portion of the end plate aligned with said second opening, said first and second clamp members being movable toward one another to decrease the space between said first and second openings in a closed position for said clamp to receive the first portion of the attachment plate and the first portion of the end plate in said first internal compartment and to receive the second portion of the attachment plate and the second portion of the end plate in said second internal compartment; and

a connector securing said first and second clamp members to one another in said closed position, said clamp when secured in said closed position on the feedwater sparger end bracket assembly constraining the first portion of the attachment plate and the first portion of the end plate between said first internal walls and constraining the second portion of the attachment plate and the second portion of the end plate between said second internal walls.

2. (Previously Presented) A clamp for installation on a feedwater sparger end bracket assembly having an attachment plate connected to an end plate of a feedwater sparger within a boiling water reactor vessel, said clamp comprising

a first clamp member including a first internal compartment and a first opening communicating with said first internal compartment, said first internal compartment being defined between a pair of first internal walls of said first clamp member, said first internal walls being spaced from one another to receive a first portion of the attachment plate and a first portion of the end plate therebetween with a close fit, said first internal walls comprising a first planar internal forward wall and a first planar internal rearward wall, said first planar internal forward wall being parallel to said first planar internal rearward wall;

a second clamp member including a second internal compartment and a second opening communicating with said second internal compartment, said second internal compartment being defined between a pair of second internal walls of said second clamp member, said second internal walls being spaced from one another to receive a second portion of the attachment plate, opposite the first portion of the attachment plate, and a second portion of the end plate, opposite the first portion of the end plate, therebetween with a close fit, said second internal wall comprising a second planar internal forward wall and a second planar internal rearward wall, said second planar internal forward wall being co-planar with said first planar internal forward wall, said second planar internal rearward wall being co-planar with said first planar internal rearward wall, said second opening being spaced from and in alignment with said first opening in facing relation therewith, said first and second clamp members being

movable away from one another to increase the space between said first and second openings in an open position for said clamp to allow the feedwater sparger end bracket assembly to be positioned between said first and second clamp members with the first portion of the attachment plate and the first portion of the end plate aligned with said first opening and with the second portion of the attachment plate and the second portion of the end plate aligned with said second opening, said first and second clamp members being movable toward one another to decrease the space between said first and second openings in a closed position for said clamp to receive the first portion of the attachment plate and the first portion of the end plate in said first internal compartment and to receive the second portion of the attachment plate and the second portion of the end plate in said second internal compartment; and

a connector securing said first and second clamp members to one another in said closed position, said clamp when secured in said closed position on the feedwater sparger end bracket assembly constraining the first portion of the attachment plate and the first portion of the end plate between said first internal walls and constraining the second portion of the attachment plate and the second portion of the end plate between said second internal walls.

3. (Original) The clamp as recited in claim 1 wherein the boiling water reactor vessel has a central longitudinal axis and said connector has a central longitudinal axis parallel to the central longitudinal axis of the boiling water reactor vessel.

4. (Currently Amended) A clamp for installation on a feedwater sparger end bracket assembly having an attachment plate connected to an end plate of a feedwater sparger within a boiling water reactor vessel, said clamp comprising

a first clamp member including a first internal compartment and a first opening communicating with said first internal compartment, said first internal compartment being defined between a pair of first internal walls of said first clamp member, said first internal walls being spaced from one another to receive a first portion of the attachment plate and a first portion of the end plate therebetween with a close fit;

a second clamp member including a second internal compartment and a second opening communicating with said second internal compartment, said second internal compartment being defined between a pair of second internal walls of said second clamp member, said second internal walls being spaced from one another to receive a second portion of the attachment plate, opposite the first portion of the attachment plate, and a second portion of the end plate, opposite the first portion of the end plate, therebetween with a close fit, said second opening being spaced from and in alignment with said first opening in facing relation therewith, said first and second clamp members being movable away from one another to increase the space between said first and second openings in an open position for said clamp to allow the feedwater sparger end bracket assembly to be positioned between said first and second clamp members with the first portion of the attachment plate and the first portion of the end plate aligned with said first opening and with the second portion of the attachment plate and the second portion of the end plate aligned with said second opening, said first and second clamp members being movable toward one another to decrease the space between said first and second openings in a closed position for said clamp to receive the first portion of the attachment plate and the first portion of the end plate in said first internal compartment and to receive the second portion of the attachment plate and the second

portion of the end plate in said second internal compartment, said first clamp member including a first impingement shield extending toward said second clamp member and said second clamp member including a second impingement shield extending toward said first clamp member to meet said first impingement shield in said closed position, said first impingement shield and said second impingement shield being disposed between the feedwater sparger end bracket assembly and the boiling water reactor vessel; and

a connector securing said first and second clamp members to one another in said closed position, said clamp when secured in said closed position on the feedwater sparger end bracket assembly constraining the first portion of the attachment plate and the first portion of the end plate between said first internal walls and constraining the second portion of the attachment plate and the second portion of the end plate between said second internal ~~wall~~ walls.

5. (Currently Amended) The clamp as recited in claim 1 wherein said first clamp member includes a first inner shoulder transverse to said first internal ~~wall~~ walls and a first outer shoulder parallel to said first shoulder, said second clamp member includes a second inner shoulder transverse to said second internal ~~wall~~ walls and a second outer shoulder parallel to said second inner shoulder, said clamp in said closed position constraining the feedwater sparger end bracket assembly between said first inner shoulder and said first outer shoulder and between said second inner shoulder and said second outer shoulder.

6. (Original) The clamp as recited in claim 5 wherein said first clamp member includes a first surface transverse to said first inner shoulder and said first outer

shoulder, said second clamp member includes a second surface transverse to said second inner shoulder and said second outer shoulder, said first transverse surface being disposed in opposition to said second transverse surface, said clamp in said closed position constraining the feedwater sparger end bracket assembly between said first surface and said second surface.

7. (Withdrawn) The clamp as recited in claim 5 and further including a first shim pad between said first inner shoulder and the feedwater sparger and a second shim pad between said second inner shoulder and the feedwater sparger.

8. (Previously Presented) A clamp for installation on a feedwater sparger end bracket assembly having an attachment plate connected to an end plate of a feedwater sparger within a boiling water reactor vessel, said clamp comprising

a first clamp member including a first internal compartment and a first opening communicating with said first internal compartment, said first internal compartment being defined between a pair of first internal walls of said first clamp member, said first internal walls being spaced from one another to receive a first portion of the attachment plate and a first portion of the end plate therebetween with a close fit, said first internal walls being connected by a first internal transverse wall of said first clamp member;

a second clamp member including a second internal compartment and a second opening communicating with said second internal compartment, said second internal compartment being defined between a pair of second internal walls of said second clamp member, said second internal walls being spaced from one another to receive a second portion of the attachment plate, opposite the first portion of the attachment plate, and a second portion of the end plate, opposite the first portion of the end plate,

therebetween with a close fit, said second internal walls being connected by a second internal transverse wall of said second clamp member, said second opening being spaced from and in alignment with said first opening in facing relation therewith, said first and second clamp members being movable away from one another to increase the space between said first and second openings in an open position for said clamp to allow the feedwater sparger end bracket assembly to be positioned between said first and second clamp members with the first portion of the attachment plate and the first portion of the end plate aligned with said first opening and with the second portion of the attachment plate and the second portion of the end plate aligned with said second opening, said first and second clamp members being movable toward one another to decrease the space between said first and second openings in a closed position for said clamp to receive the first portion of the attachment plate and the first portion of the end plate in said first internal compartment and to receive the second portion of the attachment plate and the second portion of the end plate in said second internal compartment;

a first spacer between said first transverse wall and the end plate and a second spacer between said second transverse wall and the end plate; and

a connector securing said first and second clamp members to one another in said closed position, said clamp when secured in said closed position on the feedwater sparger end bracket assembly constraining the first portion of the attachment plate and the first portion of the end plate between said first internal walls and constraining the second portion of the attachment plate and the second portion of the end plate between said second internal walls.

9. (Previously Presented) A clamp for installation on a feedwater sparger end bracket assembly having an attachment plate connected to an end plate of a feedwater sparger within a boiling water reactor vessel, said clamp comprising

a first clamp member including a first internal compartment and a first opening communicating with said first internal compartment, said first internal compartment being defined between a pair of first internal walls of said first clamp member, said first internal walls being spaced from one another to receive a first portion of the attachment plate and a first portion of the end plate therebetween with a close fit, said first clamp member further including a first shoulder extending between said first internal walls on a side of said first clamp member, a second shoulder extending from said first internal compartment in a first direction on an opposite side of said first clamp member and a tab spaced from said first internal compartment in a second direction, opposite said first direction, on said opposite side of said first clamp member;

a second clamp member including a second internal compartment and a second opening communicating with said second internal compartment, said second internal compartment being defined between a pair of second internal walls of said second clamp member, said second internal walls being spaced from one another to receive a second portion of the attachment plate, opposite the first portion of the attachment plate, and a second portion of the end plate, opposite the first portion of the end plate, therebetween with a close fit, said second clamp member further including a first shoulder extending between said second internal walls on a side of said second clamp member corresponding to said side of said first clamp member, a second shoulder extending from said second internal compartment in said first direction on an opposite

side of said second clamp member corresponding to said opposite side of said first clamp member, and a tab spaced from said second internal compartment in said second direction on said opposite side of said second clamp member, said second opening being spaced from and in alignment with said first opening in facing relation therewith, said first and second clamp members being movable away from one another to increase the space between said first and second openings in an open position for said clamp to allow the feedwater sparger end bracket assembly to be positioned between said first and second clamp members with the first portion of the attachment plate and the first portion of the end plate aligned with said first opening and with the second portion of the attachment plate and the second portion of the end plate aligned with said second opening, said first and second clamp members being movable toward one another to decrease the space between said first and second openings in a closed position for said clamp to receive the first portion of the attachment plate and the first portion of the end plate in said first internal compartment and to receive the second portion of the attachment plate and the second portion of the end plate in said second internal compartment; and

a connector securing said first and second clamp members to one another in said closed position, said clamp when secured in said closed position on the feedwater sparger end bracket assembly constraining the first portion of the attachment plate and the first portion of the end plate between said first internal walls, constraining the second portion of the attachment plate and the second portion of the end plate between said second internal walls and constraining the feedwater sparger end bracket

assembly and the feedwater sparger between said first shoulders and said second shoulders and said tabs.

10. (Previously Presented) A clamp for installation on a feedwater sparger end bracket assembly connected to a conduit of a feedwater sparger at a sparger/bracket junction within a boiling water reactor vessel, said clamp comprising

an upper clamp member having a lower surface, an internal compartment open along said lower surface, an inner shoulder protruding downwardly from said lower surface and an outer shoulder protruding downwardly from said lower surface, said compartment being defined between spaced internal walls, said inner shoulder being parallel to said outer shoulder;

a lower clamp member having an upper surface, an internal compartment open along said upper surface, an inner shoulder protruding upwardly from said upper surface and an outer shoulder protruding upwardly from said upper surface, said compartment of said lower clamp member being defined between spaced internal walls, said inner shoulder of said lower clamp member being parallel to said outer shoulder of said lower clamp member; and

a connector connecting said upper and lower clamp members with said upper surface and said lower surface in facing relation, with a space between said upper surface and said lower surface, with said compartment of said lower clamp member aligned with said compartment of said upper clamp member, with said inner shoulder of said lower clamp member aligned with said inner shoulder of said upper clamp member and with said outer shoulder of said lower clamp member aligned with said outer shoulder of said upper clamp member, said connector permitting adjustment of said

space between said upper surface and said lower surface to receive an upper portion of the sparger/bracket junction in said compartment of said upper clamp member and a lower portion of the sparger/bracket junction in said compartment of said lower clamp member, said clamp constraining the sparger/bracket junction between said walls of said upper clamp member and between said walls of said lower clamp member, said clamp constraining the feedwater sparger end bracket assembly between said inner shoulder of said upper clamp member and said outer shoulder of said upper clamp member and between said inner shoulder of said lower clamp member and said outer shoulder of said lower clamp member, and said clamp constraining the feedwater sparger end bracket assembly between said lower surface and said upper surface.

11. (Original) The clamp as recited in claim 10 wherein said inner shoulder of said upper clamp member has a planar outer surface, said outer shoulder of said upper clamp member has a planar inner surface parallel to said outer surface, said inner shoulder of said lower clamp member has an outer surface co-planar with said outer surface of said upper clamp member, said outer shoulder of said lower clamp member has an inner surface co-planar with said inner surface of said upper clamp member, said clamp constraining the feedwater sparger end bracket assembly between said outer surface of said inner shoulder of said upper clamp member and said inner surface of said outer shoulder of said upper clamp member and between said outer surface of said inner shoulder of said lower clamp member and said inner surface of said outer shoulder of said lower clamp member.

12. (Previously Presented) A clamp for installation on a feedwater sparger end bracket assembly connected to a conduit of a feedwater sparger at a sparger/bracket junction within a boiling water reactor vessel, said clamp comprising

an upper clamp member having a lower surface, an internal compartment open along said lower surface, an inner shoulder protruding downwardly from said lower surface and an outer shoulder protruding downwardly from said lower surface, said compartment being defined between spaced internal walls, said inner shoulder being parallel to said outer shoulder, said inner shoulder of said upper clamp member having a planar outer surface, said outer shoulder of said upper clamp member having a planar inner surface parallel to said outer surface, said internal walls of said upper clamp member being parallel to one another and being perpendicular to said outer surface of said inner shoulder of said upper clamp member and to said inner surface of said outer shoulder of said upper clamp member;

a lower clamp member having an upper surface, an internal compartment open along said upper surface, an inner shoulder protruding upwardly from said upper surface and an outer shoulder protruding upwardly from said upper surface, said compartment of said lower clamp member being defined between spaced internal walls, said inner shoulder of said lower clamp member being parallel to said outer shoulder of said lower clamp member, said inner shoulder of said lower clamp member having an outer surface co-planar with said outer surface of said upper clamp member, said outer shoulder of said lower clamp member having an inner surface co-planar with said inner surface of said upper clamp member, said internal walls of said lower clamp member being co-planar with said internal walls of said upper clamp member, respectively; and

a connector connecting said upper and lower clamp members with said upper surface and said lower surface in facing relation, with a space between said upper surface and said lower surface, with said compartment of said lower clamp member aligned with said compartment of said upper clamp member, with said inner shoulder of said lower clamp member aligned with said inner shoulder of said upper clamp member and with said outer shoulder of said lower clamp member aligned with said outer shoulder of said upper clamp member, said connector permitting adjustment of said space between said upper surface and said lower surface to receive an upper portion of the sparger/bracket junction in said compartment of said upper clamp member and a lower portion of the sparger/bracket junction in said compartment of said lower clamp member, said clamp constraining the sparger/bracket junction between said walls of said upper clamp member and between said walls of said lower clamp member, said clamp constraining the feedwater sparger end bracket assembly between said outer surface of said inner shoulder of said upper clamp member and said inner surface of said outer shoulder of said upper clamp member and between said outer surface of said inner shoulder of said lower clamp member and said inner surface of said outer shoulder of said lower clamp member, and said clamp constraining the feedwater sparger end bracket assembly between said lower surface and said upper surface.

13. (Original) The clamp as recited in claim 12 wherein said lower surface is planar and perpendicular to said internal walls of said upper clamp member, and said upper surface is planar and parallel to said lower surface.

14. (Currently Amended) ~~The~~ A clamp for installation on a feedwater sparger end bracket assembly connected to a conduit of a feedwater sparger at a sparger/bracket junction within a boiling water reactor vessel, said clamp comprising an upper clamp member having a lower surface, an internal compartment open along said lower surface, an inner shoulder protruding downwardly from said lower surface and an outer shoulder protruding downwardly from said lower surface, said compartment being defined between spaced internal walls, said inner shoulder being parallel to said outer shoulder, said inner shoulder of said upper clamp member being disposed between said internal walls of said upper clamp member, said outer shoulder of said upper clamp member extending from said compartment of said upper clamp member in a first direction;

a lower clamp member having an upper surface, an internal compartment open along said upper surface, an inner shoulder protruding upwardly from said upper surface and an outer shoulder protruding upwardly from said upper surface, said compartment of said lower clamp member being defined between spaced internal walls, said inner shoulder of said lower clamp member being parallel to said outer shoulder of said lower clamp member, said inner shoulder of said lower clamp member being disposed between said internal walls of said lower clamp member, said outer shoulder of said lower clamp member extending from said compartment of said lower clamp member in said first direction;

a downwardly protruding tab on said upper clamp member and an upwardly protruding tab on said lower clamp member for being disposed between the conduit of the feedwater sparger and a wall of the boiling water reactor vessel with a close fit, said

tab of said upper clamp member being parallel to said inner shoulder of said upper clamp member, said tab of said lower clamp member being parallel to said inner shoulder of said lower clamp member, said tabs being spaced from said compartments, respectively, in a second direction opposite said first direction; and

a connector connecting said upper and lower clamp members with said upper surface spaced from said lower surface in facing relation, with a space between said upper surface and said lower surface, with said compartment of said lower clamp member aligned with said compartment of said upper clamp member, with said inner shoulder of said lower clamp member aligned with said inner shoulder of said upper clamp member and with said outer shoulder of said lower clamp member aligned with said outer shoulder of said upper clamp member, said connector permitting adjustment of said space between said upper surface and said lower surface to receive an upper portion of the sparger/bracket junction in said compartment of said upper clamp member and a lower portion of the sparger/bracket junction in said compartment of said lower clamp member, said clamp constraining the sparger/bracket junction between said walls of said upper clamp member and between said walls of said lower clamp member, said clamp constraining the feedwater sparger end bracket assembly between said inner shoulder of said upper clamp member and said outer shoulder of said upper clamp member and between said inner shoulder of said lower clamp member and said outer shoulder of said lower clamp member, said clamp constraining the feedwater sparger between said inner shoulders and said tabs, respectively, and said clamp constraining the feedwater sparger end bracket assembly between said lower surface and said upper surface.

15. (Original) A clamp for installation on a feedwater sparger end bracket assembly connected to a conduit of a feedwater sparger at a sparger/bracket junction within a boiling water reactor vessel, said clamp comprising

an upper clamp member for being assembled over a top of the feedwater sparger end bracket assembly, said upper clamp member including a compartment receiving an upper portion of the sparger/bracket junction, inner shoulder means along an inner side of the feedwater sparger end bracket assembly and outer shoulder means along an outer side of the feedwater sparger end bracket assembly for constraining the feedwater sparger end bracket assembly between said inner shoulder means and said outer shoulder means in a direction radial to the boiling water reactor vessel, and a surface disposed along the top of the feedwater sparger end bracket assembly, said compartment having wall means for constraining the sparger/bracket junction in a direction horizontal to the boiling water reactor vessel;

a lower clamp member for being assembled over a bottom of the feedwater sparger end bracket assembly, said lower clamp member including a compartment receiving a lower portion of the sparger/bracket junction, inner shoulder means along the inner side of the feedwater sparger end bracket assembly and outer shoulder means along the outer side of the feedwater sparger end bracket assembly for constraining the feedwater sparger end bracket assembly between said inner shoulder means of said lower clamp member and said outer shoulder means of said lower clamp member in said direction radial to the boiling water reactor vessel, and a surface disposed along the bottom of the feedwater sparger end bracket assembly cooperating with said surface of said upper clamp member to constrain the feedwater sparger end

bracket assembly between said surfaces in a direction vertical to the boiling water reactor vessel, said compartment of said lower clamp member having wall means for constraining the sparger/bracket junction in said direction horizontal to the boiling water reactor vessel; and

connector means for connecting said upper and lower clamp members on the feedwater sparger end bracket assembly.

16. (Currently Amended) A clamp as for installation on a feedwater sparger end bracket assembly connected to a conduit of a feedwater sparger at a sparger/bracket junction within a boiling water reactor vessel, said clamp comprising

an upper clamp member for being assembled over a top of the feedwater sparger end bracket assembly, said upper clamp member including a compartment receiving an upper portion of the sparger/bracket junction, inner shoulder means along an inner side of the feedwater sparger end bracket assembly and outer shoulder means along an outer side of the feedwater sparger end bracket assembly for constraining the feedwater sparger end bracket assembly between said inner shoulder means and said outer shoulder means in a direction radial to the boiling water reactor vessel, and a surface disposed along the top of the feedwater sparger end bracket assembly, said compartment having wall means for constraining the sparger/bracket junction in a direction horizontal to the boiling water reactor vessel;

a lower clamp member for being assembled over a bottom of the feedwater sparger end bracket assembly, said lower clamp member including a compartment receiving a lower portion of the sparger/bracket junction, inner shoulder means along the inner side of the feedwater sparger end bracket assembly and outer shoulder

means along the outer side of the feedwater sparger end bracket assembly for constraining the feedwater sparger end bracket assembly between said inner shoulder means of said lower clamp member and said outer shoulder means of said lower clamp member in said direction radial to the boiling water reactor vessel, and a surface disposed along the bottom of the feedwater sparger end bracket assembly cooperating with said surface of said upper clamp member to constrain the feedwater sparger end bracket assembly between said surfaces in a direction vertical to the boiling water reactor vessel, said compartment of said lower clamp member having wall means for constraining the sparger/bracket junction in said direction horizontal to the boiling water reactor vessel;

connector means for connecting said upper and lower clamp members on the feedwater sparger end bracket assembly; and

tab means on said upper clamp member and tab means on said lower clamp member disposed between the conduit of the feedwater sparger and a wall of the boiling water reactor vessel with a close fit for carrying moment on said clamp.

17. (Original) The clamp as recited in claim 15 and further including a recessed surface on said upper clamp member and a corresponding recessed surface on said lower clamp member, said recessed surfaces constraining the conduit of the feedwater sparger between said recessed surfaces in said direction vertical to the boiling water reactor vessel.

18. (Previously Presented) A clamp for installation on a feedwater sparger end bracket assembly connected to a conduit of a feedwater sparger at a sparger/bracket junction within a boiling water reactor vessel, said clamp comprising

an upper clamp member for being assembled over a top of the feedwater sparger end bracket assembly, said upper clamp member including a compartment receiving an upper portion of the sparger/bracket junction, inner shoulder means along an inner side of the feedwater sparger end bracket assembly and outer shoulder means along an outer side of the feedwater sparger end bracket assembly for constraining the feedwater sparger end bracket assembly between said inner shoulder means and said outer shoulder means in a direction radial to the boiling water reactor vessel, and a surface disposed along the top of the feedwater sparger end bracket assembly, said compartment having wall means for constraining the sparger/bracket junction in a direction horizontal to the boiling water reactor vessel, said upper clamp member including an impingement shield disposed between the sparger/bracket junction and a wall of the boiling water reactor vessel;

a lower clamp member for being assembled over a bottom of the feedwater sparger end bracket assembly, said lower clamp member including a compartment receiving a lower portion of the sparger/bracket junction, inner shoulder means along the inner side of the feedwater sparger end bracket assembly and outer shoulder means along the outer side of the feedwater sparger end bracket assembly for constraining the feedwater sparger end bracket assembly between said inner shoulder means of said lower clamp member and said outer shoulder means of said lower clamp member in said direction radial to the boiling water reactor vessel, and a surface disposed along the bottom of the feedwater sparger end bracket assembly cooperating with said surface of said upper clamp member to constrain the feedwater sparger end bracket assembly between said surfaces in a direction vertical to the boiling water

reactor vessel, said compartment of said lower clamp member having wall means for constraining the sparger/bracket junction in said direction horizontal to the boiling water reactor vessel, said lower clamp member including an impingement shield disposed between the sparger/bracket junction and the wall of the boiling water reactor vessel, said impingement shields extending toward and meeting one another to isolate the sparger/bracket junction from the wall of the boiling water reactor vessel ; and

connector means for connecting said upper and lower clamp members on the feedwater sparger end bracket assembly.

19-31. (Canceled)